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AUTHOR Scarbeau, Brian G.
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ABSTRACT

Following a definition of multimedia, a description of the advantages of multimedia software, and a list of necessary multimedia hardware, this paper describes in detail the phasing in of new technology into the curriculum at Lake-Sumter Community College (Florida). Implementation of a one-credit course entitled Introduction to Multimedia Computer Applications, which was offered as an elective for students by the Computer Information Systems Department, is described; and features of Linkway (i.e., IBM's multimedia software for organization of information) are outlined. The paper includes lists of new publications for multimedia, multimedia publishers, as well as a glossary of multimedia terminology. (ALF)

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THIRD NATIONAL CONFERENCE ON
COLLEGE TEACHING AND LEARNING

JACKSONVILLE, FLORIDA --APRIL 10, 1992

BRIEF SUMMARY OF THE MAJOR POINTS AND CONCLUSION

Brian G. Scarbeau
Lake-Sumter Community College

INTRODUCING MULTIMEDIA APPLICATIONS INTO THE CURRICULUM USING IBM'S

What is multimedia software?

Why use multimedia software?

Phasing in new technology into the curriculum

How Lake-Sumter Community College will be using multimedia applications campuswide

Exploring IBM Linkway Multimedia Software

"Now, five hundred years after Gutenberg, fifty years into the television age, and forty years after the introduction of the computer, we finally have in one tool the intellectual content of print, the images of video, the sensory impact of sound, and the speed of electronics."David Shefrin, President, Interactive Video Industry Association

What is multimedia software?

Multimedia is an exciting new way to convey messages with the personal computer which allows you to mix a number of media including audio, video, text, numerical data, and graphics.

Why use multimedia software?

Multimedia has been used as a communications tool for a long time. The printing press has allowed us to use books for learning for some time now. Television, films, slides and the VCR are still used as instructional tools in many classes. Transparencies for overhead projection with elaborate graphs and text are still another of the teacher tools used today.

Now, there is a broader selection of technology that can be used to assist the teacher. Multimedia has allowed laser discs, CD ROMS, the usage of speech, music, and digitized pictures to be linked together with the personal computer to create new ways for students to learn.

This type of technology is ideal for educators who face the constant challenge of educating a wide diversity of students. Teachers have been accustomed to using several teaching tools such as films, slides, overhead transparencies, white boards, black boards, flip charts, handouts, graphs, audio

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tapes, and more recently the computer to help the student learn.

What makes multimedia exciting to the student is the fact that it is interactive. Students can select different options from the computer screen and custom design their own learning. Teachers have the option of either designing their own multimedia courseware or selecting from several multimedia programs that are applicable to their discipline of study.

Students have the opportunity to experience historical events such as listening to Dr. Martin Luther King's famous "I have a dream..." speech while looking at a digitized picture of him.
Or, students have the opportunity to actually see and hear a heartbeat on their computer. Animation allows the heart to move and digitized sound is created for the heart beat to be heard through speakers that are attached to the computer.

Multimedia will make a tremendous impact on the way students learn and the way teachers teach. Traditional teaching tools such as textbooks, films or television are not interactive. Students had no choices to make, but with multimedia, students can design their own path of learning along with the guidance of the teacher.

Equipment needed for multimedia.

Before purchasing any new equipment, decide what type of media will be effective in your presentations: digitized pictures, animation, speech, music, live motion pictures with a laser disc, CD ROM. Some multimedia programs are now available to use with a CD ROM attached to your computer system.

If funding for your multimedia is limited, start slow. Buy only what you need to get started and add on to your multimedia inventory at a later date.

Before you start, do a physical inventory on campus of the equipment you might want to use for your multimedia project. Before buying equipment, find out if there is existing equipment that different departments might be using, such as a hand scanner or flat bed scanner, that you might be able to use in your multimedia presentation.

Also, find out what departments would benefit by using multimedia applications and try to piggyback with them to get all of the equipment that will be needed to do multimedia. All departments will benefit by getting equipment that can be shared. Remember you only need to have a picture digitized or music created just once for your presentation, and then the equipment can be passed along for some other department to use.

Finally, determine if the multimedia equipment will be just for faculty usage or if there will be a course in multimedia offered to students. Communicate with other faculty members about your multimedia project. It's nice not to be alone in a new venture. Share your triumphs and your frustrations as well.

The more time you spend in planning, the better organized you will be and the faster you can get started with multimedia.

The following equipment is required to create and present multimedia:

CPU: At least a 386 personal computer
Display: At least a VGA
Memory: At least 2 MB
Hard Drive: At least 60 MB
Mouse

The following equipment is optional and can be added on after you have learned how to use your multimedia software and determined what your needs will be:

CD ROM
Laser disc player
Motion peripheral card to display laser disc
Audio Capture and Playback peripheral card
Speakers
Microphone
Digitized camera
Video Capture peripheral card and software to digitize
Scanner
Touch Screen

Multimedia software allows you to be able to use a combination of media to enhance your presentation.

Phasing in new technology into the curriculum at Lake-Sumter Community College.

Lake-Sumter Community College started using multimedia technology in the Nursing Department with the utilization of an IBM Infowindow touch screen computer system that integrates with a laser disc player. Two laser disc players have been used with a Personal Computer Applications course that was used with students who wanted to study independently.

In the fall of 1991, a one-credit course called Introduction to Multimedia Computer Applications was accepted by the curriculum committee to be offered in the fall of 1992. This course, offered by the Computer Information Systems Department, will be an elective for students.

The introductory multimedia course will cover the following topics: how multimedia technology is used today; what equipment is needed to do multimedia; how to use IBM Linkway multimedia software; and how to design a multimedia application.

Students taking the multimedia course will be required to create a multimedia project of their choice. A projects day will be scheduled so that administration, faculty, and students will have the opportunity to view the multimedia projects. Faculty who like a multimedia project will have the opportunity to use that application in their classes.

Lake-Sumter Community College had the necessary 386 IBM PS/2 equipment to utilize multimedia. IBM Linkway multimedia software was purchased along with the IBM M-Audio Capture and

Playback Adapter card to be used for speech and music playback. In addition, audio speakers and a microphone were purchased. Funding was approved by the SPD committee for all the necessary multimedia equipment.

At a later time, the necessary equipment will be purchased to digitize color pictures and create music files.

Another goal at L-SCC will be to develop a cross-disciplinary approach to multimedia. The Computer Information Systems, Music and Art departments will work together to encourage development and expansion of multimedia. The Art Department currently offers a course called Introduction to Computer Art. This course covers how computers are used in graphic arts and covers the usage of colors, screen designs, and animation using many popular software products.

The multimedia course offered in the Computer Information Systems Department will complement this course and students who want to continue learning about multimedia should take this course.

Also, the Music Department wants to get involved with creating music using a keyboard and midi interface. The music files created would then be used by students in the multimedia course.

There are tremendous benefits of using multimedia in the classroom and new opportunities for both faculty and students. Interested faculty will have the opportunity to create or use existing multimedia applications.

Exploring IBM Linkway Multimedia Software

Linkway is IBM's version of hypertext tool for organization of information.

Linkway is multimedia software that allows the interfacing of :
Graphics
Music
Speech
Text
CD ROM
Laser disc

L-SCC selected Linkway because the software was very powerful for the needs of the college and the price of the software is very reasonable.

The Linkway user first creates a folder which is a Linkway file. A folder is equivalent to a HyperCard stack. The program works with pull down menus, on screen buttons, and pop-up screens all selected by a mouse.

A folder contains pages. A page has objects on it: text, graphics, or a button. A button is an object that can go on a page. Each page is linked together in the folder to make the presentation.

There are seven buttons to select:
Go, Link, Find, Text Pop-Up, Picture Pop-Up, Script, and Document. Each one of these buttons

performs a certain task on the page it is located on. For example, a Go button when activated will advance to the next screen.

Linkway has its own paint program to create graphics screens for presentations. Digitized pictures can be modified in the paint program if necessary.

It doesn't take a great deal of time to learn how to create a Linkway folder. It comes with a tutorial that helps you understand how to create a folder, put pages into your folder, and how to put objects on the page.

All in all, Linkway will be a good investment for Lake-Sumter Community College's needs.

NEW PUBLICATIONS FOR MULTIMEDIA

NEWMEDIA AGE, $24.00 year
Hypermedia Communications
901 Mariners Blvd.
Suite 2365
San Mateo, CA 94404

Digital Media: A Seybold Report, $295.00 year
Seybold Publications
Box 644
Media, PA 19063

Multi-Media Computing and Presentation, $349.00 year
Multimedia Computing Corporation
3501 Ryder St.
Santa Clara, CA 95051

Mind over Media, $175.00 bimonthly
Multimedia Computing Corp.
3501 Ryder St.
Santa Clara, CA 95051

Media Letter, $395.99 yearly
P.O. Box 142075
Coral Gables, FL 33114

New Media Products, $250.00 yearly
330 Distel Circle
Suite 150
Los Altos, CA 94022

Bove and Rhodes Inside Report on Desktop Publishing and Multimedia, $195.00 yearly
Bove & Rhodes
P.O. Box 1289
Gualala, CA 95445

MULTIMEDIA PROFESSIONAL ORGANIZATIONS

Interactive Video Industry Association
800 K Street N.W.
Suite 440
Washington, DC 20001

MULTIMEDIA TERMINOLOGY

Advanced Interactive VIDEO (AIV)
Interactive videodisc format and system using LV ROM, a method of storing analog videos, digital audio, and digital data on a single videodisc.

Asymmetric system
A video system that requires more equipment to store, process, or compress a digital image than it needs to play that image back. Intel's Digital Video Interactive (DVI) system and the Philips Sony CD-I system are asymmetric in their full fidelity modes.

Authoring system
Specialized computer software which helps its users design interactive courseware in everyday language without the details of having to program the computer.

Board
Peripheral attached to computer mother board slot. Examples: CD ROM card must be plugged into one of the vacant slots on the mother board.

CAV and CLV
The two main ways of recording video on videodiscs. With the CAV (constant angular velocity) method, the rotation speed of the disk stays constant, while with the CLV (constant linear velocity) method, the rotation rate changes to keep data on the disk passing the laser pickup at a constant rate. CAV videodiscs are capable of random access and therefore are the type generally used for interactive multimedia applications.

CBT
Computer Based Training--
The use of computers for interactive instruction.

CD-I
Compact disc-interactive-a standard for CDs that lets you integrate data, still graphics, audio, and motion video on the same disk.

CD-ROM drive or player
A device that retrieves data from a disc pressed in the CD-ROM format. CD-ROM drive or player can be built into the computer system or can be external.

Compact Disc (CD)
A 4.75 inch (12 cm) optical disc that contains information encoded digitally in the CLV format.

Courseware
Instructional software including all discs, books, charts and computer programs necessary to deliver

a complete instructional module or course.

CPU
Central Processing Unit--
The cpu or brain of a computer system, in which all calculations, instructions, and data manipulations are performed. It contains the main storage, arithmetic unit and special register group. Also called the microprocessor. At least a 386 CPU must be used for multimedia applications.

Delivery system
The set of video and computer equipment actually used to deliver the interactive video program. A delivery system may comprise as little as a videodisc player connected to a computer system or external speakers, CD-ROM player, and a videodisc player connected to a computer system.

DVI
Digital video interactive--
Intel Corporation's proprietary technology for putting full motion video on CDs and magnetic media at a very high level of compression.

Frame
A single picture in a video recording.

Full motion video
Video sequences or systems that provide enough images per second to afford the illusion of smooth motion.

Graphics
All visuals prepared for production.

Hardware
The electronic equipment used for processing data.

HyperCard
A Macintosh software product developed by Apple Computer Company. Using the philosophy of hypertext, the program enables users to randomly organize information in a manner like that of their own thinking.

Hypermedia
An extension of hypertext that incorporates a variety of other media like audio, video and graphics.

Hypertext
The concept of non-sequential writing which allows writers to link information together through a variety of paths or connections. Hypertext allows users to seek greater depths of information by moving between related documents along thematic lines or accessing definitions and bibliographic references without losing the context of the original inquiry. The term was coined by Theodore Nelson in the early 1960's.

Icon
A symbolic, pictorial representation of any function or task.

Interactive
Involving the active participation of the user in directing the flow of the computer or video program; a system which exchanges information with the viewer, processing the viewer's input in order to generate the appropriate response within the context of the program.

Kiosk
This is the housing for an unmanned, self-contained, free-standing interactive system that is generally located in a public access area.

Laser disc
LaserDisc is a trademark of Pioneer Electronics USA for its reflective optical videodisc products.

Linkway
IBM multimedia software program that combines text, graphics, pictures, music, voice and full motion video interactively.

M-Audio Capture and Playback Adapter/A
This peripheral card by IBM provides digital recording and playback of high quality stereo sound used with Linkway Multimedia Software.

M-Motion Video Adapter/A
This adapter peripheral card by IBM delivers full motion video and audio on an IBM PS/2 Micro Channel System.
Video is digitized and can be displayed full screen or in multiple windows; sources include video discs, video cameras, and VCR.

Multimedia
A presentation or program that involves the use of multiple media data types such as audio, video, graphics, text, and natural images. Multimedia involves different media sources operating under computer control.

Multimedia system
A computer based system capable of processing and displaying multiple media data types such as audio, video, graphics, text, and natural images. Such data types may reside on the same data storage device or may come from different source media such as CD-ROM and videodisc.

Overlay
The facility to superimpose computer generated text or graphics onto motion or still video.

RS 232
A standard serial interface between a computer and its peripherals. Connection between laser disc

player and computer.

Scanner
Peripheral attached to the computer system that takes an original picture and then scans it into the computer system that then can be saved in a graphics format to be used in a multimedia presentation.

Symmetric system
A video system that is capable of both storing and playing back compressed digital images.

Touch Screen
A video or computer display which acts as a control or input device under the physical finger touch of the user.

Ultimedia
IBM's family of multimedia computer systems and products.
The term refers to IBM's interpretation of multimedia as being a sum of three revolutions wrapped into one-[a revolution in communications that combines the audiovisual power of television, the publishing power of the printing press and the interactive power of the computer.]

Video
A system of recording and transmitting information which is primarily visual by translating moving or still images into electrical signals.

Videodisc
A generic term describing a medium of information storage which uses thin circular plates of varying formats, upon which video, audio, and data signals may be encoded for playback on video.

Windows
An operating system by Microsoft Corporation that allows the user to do multitasking: accomplish more than one task using different software programs.

Excerpted from Videodisc and Related Technologies: A Glossary of Terms.

MULTIMEDIA PUBLISHERS

McGraw-Hill/Datapro has repackaged and published, in multimedia fashion, some of the information contained in its computer hardware and software, print media and products directories.

ABC News Interactive has published interactive video disk documentaries.

Time Warner New Media has introduced a multimedia version of Mozart's Opera "The MAGIC FLUTE."

National Geographic has published a geohistory of the United States that combines stills from National Geographic's photo library with narrative, text and illustrations.

Grolier Electronic Publishing has published a multimedia CD of its encyclopedia.

Encyclopedia Britannica has a similar version of Compton's Encyclopedia with illustrations, and audiovisual animation sequences.

The Harvard Business School plans to issue a series of multimedia programs on management issues.

Robert Abel, an independent producer of television commercials, has created GUERNICA, a prototype multimedia documentary that covers the life, works, and times of Picasso.

Palenque is a pilot program developed by the Bank Street College of Education. It takes the user through a travelogue of ancient Mayan sites, using text, still pictures, audio, and video images.

The Children's Television Workshop, better known as Sesame Street, has developed a pilot program called Words in the Neighborhood. Designed for pre-schoolers, this multimedia venture links a video wordbook with footage taken from the Sesame Street TV show.

Several companies are now experiencing the power of multimedia. Companies as diverse as Bethlehem Steel, DuPont, General Motors, Domino's Pizza, Coca Cola, General Telephone and Electric, Arthur Anderson, General Electric, IBM, Ogilvy & Mather and Steelcase have begun to use multimedia in corporate training, reporting, promotion, and analysis programming. Companies are taking advantage of live motion video, sound, still pictures, clear graphics and an easy input device such as your finger on a touch screen to create kiosks to house the computer hardware equipment.